Abstract

The latching switch device includes a passage, a first cavity, a second cavity, a channel extending from each cavity to the passage, non-conductive fluid located the cavities, conductive liquid located in the passage, a first electrode, a second electrode and a latching structure associated with each channel. The passage is elongate. The channels are spatially separated from one another along the length of the passage. The electrodes are in electrical contact with the conductive liquid and are located on opposite sides of one of the channels. The conductive liquid includes free surfaces. Each latching structure includes energy barriers located in the passage on opposite sides of the channel. The energy barriers interact with the free surfaces of the conductive liquid to hold the free surfaces apart from one another.